

**Familiarize, and Plan your application:**

Examine and familiarize yourself with all the parts included. Note that the "Tie Block" has two types of connecting webs. By cutting the "fine" (small) web, the "Tie Block" becomes curvable. We do not recommend that the switch be curved away from the diverging track. However, cutting the "fine" (small) web completely away can allow it. In either case, do not cut the "heavier" (large) web on either side. The switch should not curve through the "Point" and "Frog" sections. Switches that curve through these areas have a special "Gauge", "Point", and "Frog" design used in only the most modern "high speed" operations of today's rail industry. Central Valley will address some of these "styles" as required by customer responses. If curved switches are regular design features on your project, let us recommend using the longer, #'s 7, 8, and 9 angles. These longer switches are more forgiving in curved applications, and just work flawlessly (if installed to our recommendations properly) in regular operations.

Central Valley Ties and Switch Ties are precision molded from styrene with tie plate detail that insures accurate gauging, and rail location.

Included with the switch kits and switch tie packs are diagrams showing the average diverting radius for the corresponding switch angle. This information should help you to layout yard ladder tracks and crossovers. Of course, when using CVT switch kits and or switch ties, free flowing curved switch work is possible.

Although the ties could be painted before installation, painting when they are down is probably better. Almost any flat finish model paint will work just fine. Various browns, tans, and grays will look right. Tie plates can be painted (with the rail sides) various rust colors, including Tuscan red or boxcar red.

Although the rail can be spiked, I have found that gluing the rail with "Barge" all-purpose cement works very well. With only very occasional spiking around rail gaps or switch points, the "Barge" on my personal layout has held for over fifteen years. "Barge" is sold through hardware stores in tubes but is more widely known in the shoe repair and leather-crafting world. Using "Barge", other glues, or contact cements, allows the use of smaller rail than even code 70. For sidings or even main trackage on branch or short line railroads in H-O scale, code 55 works quite well. I have used a lot of code 55 on CVT in yards and sidings with "Barge" cement.

**Getting started:**

**Step #1 "Tie Block"**

Glue the "Tie Block" down in place on your project using the proper glue or cement of your choice as mentioned in #11, & #13 of the "Additional tools and materials required" section in these instructions. If the switch is in a curve cut only the "fine" webs. Again, we do not recommend that the switch be curved away from the diverging track. However, cutting the "fine" (small) web completely away can allow this. In either case, do not cut the "heavier" (large) web on either side. The switch should not curve through the "Point" and "Frog" sections. Let the adhesive completely cure, or dry.

**Step #2 "Your Switch"**

After gluing the "Tie Block" to the roadbed, glue the "Frog Block" to the "Tie Block". Note the locating bosses on the underside of the "Frog Block". The large one will go into the round hole, and the smaller one will go into the elongated hole in the "Tie Block". The "Frog Block" should be glued with liquid plastic cement. Let the adhesive completely cure, or dry. (About 1 hour)

**Step #3 "Points and Throw Bar"**

The #5, and #6 angle switches use a shortened point version whereas the #'s 7, 8, and 9 angles use a longer point version. The short point version requires them to be cut and trimmed as shown. The longer point version requires only the removal of the "Hook" as shown.

When the total assembly is complete, it will withstand more than enough force when activated through wire linkage systems. This "Throw-Bar" system provides the insulating system preferred for DCC control. Set the "Throw-Bar" and points aside for now and continue to step #4. There is a small hole in the hook-pivot detail of the point. These holes are provided for attaching feed wires. (see preferred wiring diagram)

**Step #4 "Head Tie"**

The Head Tie piece can be located on either side of the switch - or not at all. Some applications may not require or have room for the "Head-Ties" and switch stand detail. Apply the "Tie End Filler" parts on the tie ends opposite the head tie / switch stand side of the ties with liquid plastic cement as shown. Do not cement Head ties to the roadbed yet. Set the "Head-Ties" aside, along with the "Throw-Bar" & points. Continue to step #5.

**Step #5 "Stock Rails"** (outside "long" rails)

Cut, Peel and stick the "Foil strip" to the ribs in the "Tie Block" as shown. This will provide the electrical contact between the (outside) Stock rails, and the inner closure rails. If you install your rail with contact cement or other adhesive technique, keep the underside of the rail and the "Foil Strip" clean in these areas. If you are using "Weathered" rail, do not forget to clean their bottoms in the contact areas as well. Do not notch your stock rails, the C. V. switch points do not require notching or filing the stock rails. This simplifies "cutting" switches into existing track work.

The "Stock Rails" should extend beyond the switch assembly by several inches. This is a major advantage gained when hand laying switches and tracks. If possible, rail joints should be staggered. The continuous stock rail is a big factor in truly reliable and realistic track work. Secure the rail in a conventional fashion. When spiking, we suggest you pierce the ties with a "sewing needle" in a pin vise. The "self gauging" features of the tie plate detail, very few spikes required. Note the suggested spiking schedule shown. Form the rail(s) by hand to conform roughly to the switch tie block. On the diverging stock rail about one tie space before the point, make a slight "kink" to start the divergence. Locate the appropriate guardrail(s) (code #70 or #83), and cement them against the stock rails in the frog area as shown.

## **Step #6 "Point and Throw-bar Installation"**

Slip the "Throw-Bar" beneath (under) the stock rails into the "Tie Block" segment of the "Head-Ties". Place the point "Retainer Plate" between the points onto the "Throw-Bar" and test for fit and movement. The point retaining plate may need slight trimming for proper fit. Some fitting, bending, and even slight twisting of the points may be necessary to get them properly fitted. This process will become less frustrating with practice and experience. The point material is quite soft and can bend easily in your fingers - be gentle! There is a spare "Retainer Plate" in case of a fitting error. Getting this part right may take some time, but it must be correct for the switch to work smoothly.

Choose what activation linkage you will use. If the linkage uses a throw rod that engages the "ears" on the point "Retainer Plate" (Between the points), the retainer plate need **not** be cemented in place. This technique allows the points and "Throw-Bar" to be disassembled for repair and replacement. "Not a bad way to go". - See sketches for other linkage options.

If necessary, cement the "Retainer Plate" to the "Throw-Bar" with **tiny** precisely placed dabs of "AC" cement. It is best to dab from the **inside** of the "Retainer Plate" **openings** to the visible "Throw-Bar" surfaces. Push the "Retainer Plate" down with a small blunt tool until the cement sets one side then the other. (One-side-at-a-time).

## **Step #7 "Closure Rails"**

Cut and form the closure rail(s) to fit. Do the curved rail first as it is the longest and if a mistake is made it can be straightened and re-cut to fit the slightly shorter and straight rail. De-burr and slide each rail under the "Frog Block". Secure the point end with spikes or glue one tie space away from the "Foil strips" with fast acting "AC" cement. Again, refer to the spike schedule. Only minimal spiking is necessary. **Do not forget** to clean the underside of any "weathered" rail product in the "Foil Strip" areas.

## **Step #8 "Frog Point"**

Two (2) short pieces - (2 inch to 6 inch) each of rail are required. File a sharp point on one side of one piece of rail until you can slide all-the-way into the "Frog Block". File the opposite side of the second rail until it can be wedged against the first piece (filed side to filed side) with a smooth looking "V" inside and out. (Keep filing until you are happy with the look, there is plenty of rail to work with here!) Add insulation as required, and spike, or glue the rails in place on the "Tie Block". GENTLY file frog, points, and rails to the same level. THE SWITCH IS BASIACLLY FINISHED!

## **Step #9 "Details (Optional)"**

Included in the kit are 14 rail-braces that can be cemented to the ties in the point area. Joint bars can be used to simulate rail joints and bolt bars can be cemented to the "Frog Block". In addition, with some care while adding ballast, you can leave "air" open space under some of the rail between a few ties (this looks very real!)

Also included are parts to make a "Switch Stand". The "Switch Stand" can be installed as a dummy, or if you are brave, it can have an animated target (Activated by the "Throw-Bar"). The following are tips to assembling the animated switch stand.

**Do not remove any parts from the sprue until instructed to do so.** Carefully clean the switch stand frame of any whiskers, or flash while it is still on the sprue. Now cut the frame from the sprue and cement it to the base while the **base is still attached to the sprue**. Let dry and cut base from the sprue. Note that the cap has a tiny locating lobe that should align with the gap in the switch stand frame top. Cement base and frame into the switch stand top cap, again, while the cap is attached to the sprue. Let dry and **do not** remove. Clean out the hole with a needle or a #70 - #72 drill (Clearance for .020 diameter wire). Cut the stand from the sprue. Carefully de-burr and remove the tiny lever from the sprue. Cement the lever into place between the tiny ribs on the top of the cap and let dry.

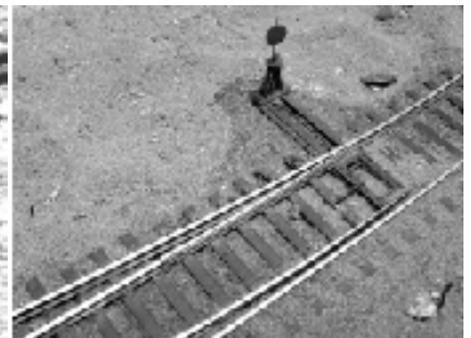
Locate and remove the tiny "Pivot / Cam" piece. With the head tie piece in position under the "Throw-Bar", Raise the end of the "Throw-Bar" and place the "Pivot / Cam" into position with the tiny cam post in the cam post slot of the "Throw-Bar". Place the switch stand assembly over the "Pivot / Cam" post and manually operate the switch and "Throw-Bar". The "Pivot / Cam" should rotate about 90°. Adjust the rotation is by slightly moving the head tie and switch stand assembly in or away from the switch "Tie Block". Cement a target of your choice to the .020 wire let dry. Insert the target and wire into switch stand and "Pivot / Cam" hole and test. When everything is working, glue the switch stand base to the head tie with a tiny dab of "AC" cement. Apply cement to the outer most edge of the base being careful not to let any glue run down inside the "Throw-Bar" area, and let dry. Finally, pin or pin and glue the "Head Tie", and switch stand assembly to the roadbed at the position you desire. Re-position the target to the proper setting. When satisfied, apply a **tiny** drop of "AC" cement to secure the target shaft. **Obviously, considerable care must be taken when painting, ballasting, and weathering. We recommend using dry chalks for applying rust stains etc. around the switch stand, point, and head tie assembly.**



**Frog Detail**



**Stand & Brace Detail**



**Point Detail**